National Character Area profile:

97. Arden

www.naturalengland.org.uk

NATURAL ENGLAND

Introduction

As part of Natural England's responsibilities as set out in the Natural Environment White Paper[1], Biodiversity 2020[2] and the European Landscape Convention[3], we are revising profiles for England's 159 National Character Areas (NCAs). These are areas that share similar landscape characteristics, and which follow natural lines in the landscape rather than administrative boundaries, making them a good decision-making framework for the natural environment.

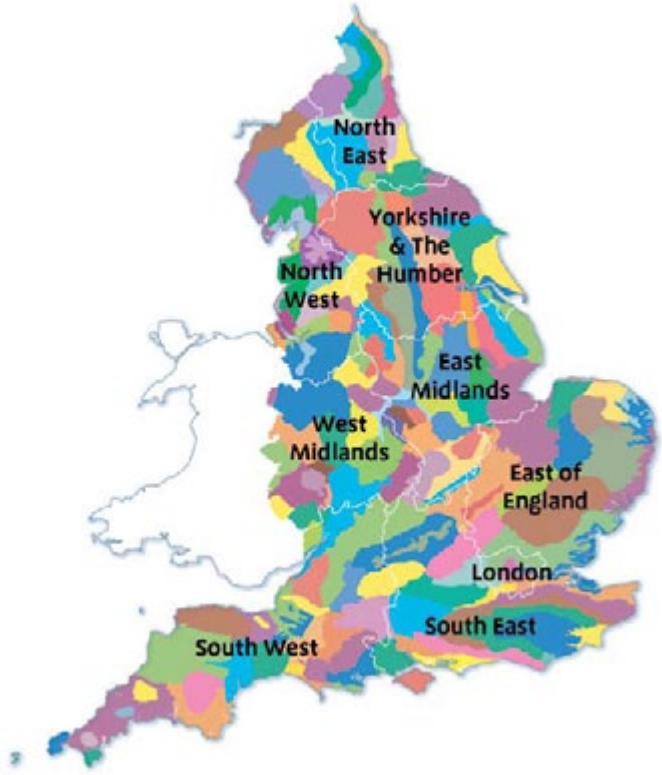
NCA profiles are guidance documents which can help communities to inform their decision-making about the places that they live in and care for. The information they contain will support the planning of conservation initiatives at a landscape scale, inform the delivery of Nature Improvement Areas and encourage broader partnership working through Local Nature Partnerships. The profiles will also help to inform choices about how land is managed and can change.

Each profile includes a description of the natural and cultural features that shape our landscapes, how the landscape has changed over time, the current key drivers for ongoing change, and a broad analysis of each area's characteristics and ecosystem services. Statements of Environmental Opportunity (SEOs) are suggested, which draw on this integrated information. The SEOs offer guidance on the critical issues, which could help to achieve sustainable growth and a more secure environmental future.

NCA profiles are working documents which draw on current evidence and knowledge. We will aim to refresh and update them periodically as new information becomes available to us.

We would like to hear how useful the NCA profiles are to you. You can contact the NCA team by emailing ncaprofiles@naturalengland.org.uk

National Character Areas map



[1] The Natural Choice: Securing the Value of Nature, Defra (2011; URL: www.official-documents.gov.uk/document/cm80/8082/8082.pdf)
[2] Biodiversity 2020: A Strategy for England's Wildlife and Ecosystem Services, Defra (2011; URL: www.defra.gov.uk/publications/files/pb13583-biodiversity-strategy-2020-111111.pdf)
[3] European Landscape Convention, Council of Europe (2000; URL: http://conventions.coe.int/Treaty/en/Treaties/Html/176.htm)

Summary

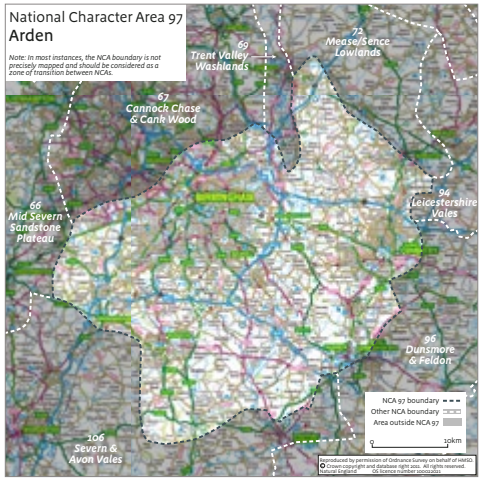
Arden comprises farmland and former wood-pasture lying to the south and east of Birmingham, including part of the West Midlands conurbation. Traditionally regarded as the land lying between the River Tame and the River Avon in Warwickshire, the Arden landscape also extends into north Worcestershire to abut the Severn and Avon Vales. To the north and north-east it drops down to the open landscape of the Mease/Sence Lowlands. The eastern part of the NCA abuts and surrounds Coventry, with the fringes of Warwick and Stratford-upon-Avon to the south. This NCA has higher ground to the west, the Clent and Lickey Hills and to the east, the Nuneaton ridge. The landscape of the lower lying central area is gently rolling with small fragmented semi-natural and ancient woodlands. Mature oaks set in hedgerows, distinctive field boundaries, historic parklands and narrow river corridors are key features, all on the doorstep of a heavily urbanised area.

Land use throughout the area is mainly, residential, agricultural and industrial including coal mining, which is still active in the north-east of the NCA. Numerous transport corridors; road, rail, air and canal run through the area. There is likely to be increased development and greater pressure upon the existing infrastructure, particularly around Birmingham, Coventry and the main towns. This pressure could lead to the creation of new green infrastructure linking the urban areas out into the more rural areas. This NCA is among the most geologically diverse. This has had a strong impact on the landscape's character and development and is further reflected in the range of locally and nationally important geological assets across the NCA. There are also many local biodiversity assets and strong cultural links with William Shakespeare and his 'Forest of Arden'.

Statements of Environmental Opportunity

- **SEO 1:** Manage and enhance the valuable woodlands, hedgerows, heaths, distinctive field boundaries and enclosure patterns throughout the NCA, retaining the historic contrast between different areas while balancing the needs for timber, biomass production, climate regulation, biodiversity and recreation.

- **SEO 2:** Create new networks of woodlands, heaths and green infrastructure, linking urban areas like Birmingham and Coventry with the wider countryside to increase biodiversity, recreation and the potential for biomass and the regulation of climate.


National Character Area 97
Arden
Note: In most instances, the NCA boundary is not precisely mapped and should be considered as a zone of transition between NCAs.
69 Trent Valley Washlands
72 Mease/Sence Lowlands
67 Cannock Chase & Cank Wood
68 Mid Severn Sandstone Plateau
94 Leicestershire Vales
96 Dunsmore & Feldon
106 Severn & Avon Vales
NCA 97 boundary
Other NCA boundary
Area outside NCA 97
0
10km

Click map to enlarge; click again to reduce.

- **SEO 3:** Conserve and enhance Arden's strong geological, industrial, and cultural resource, to increase public access, enjoyment, recreation and to retain a sense of place and history.

- **SEO 4:** Enhance the value of Arden's aquatic features such as the characteristic river valleys, meadows and standing water areas like Bittell Reservoirs, to increase resource protection such as regulating soil erosion, soil quality and water quality.

Description

Physical and functional links to other National Character Areas

To the north-west of Arden is the Mid Severn Sandstone Plateau NCA on the edges of Hagley Park. The Birmingham conurbation then links Arden with Cannock Chase and Cank Wood NCA. These National Character Areas, along with Arden, form the Natural Area referred to as 'The Midlands Plateau'.

In the north-east, the M42 transport corridor links the Mease/Sence Lowlands NCA and a sliver of the Trent Valley Washlands with Arden along the edge of Tamworth. On the eastern edge, the Warwickshire landscape flows into the Leicestershire Vales. In the central section of Arden the River Arrow starts its journey south and then merges into the River Avon near Bidford on Avon in the Severn and Avon Vales. Moving south, the River Avon flows into Dunsmore and Feldon then on into Severn and Avon Vales in the south-west.

From the highest point in Arden (Walton Hill, in the Clent Hill range), there are views from the summit looking south-west into the Shropshire Hills, Malvern Hills, Teme Valley and south into the Cotswolds. There are also views across the NCA taking in the southern fringes of Birmingham from the Heart of England Way near Meriden.

The eastern slopes of Walton Hill, the highest point in the NCA.

Key characteristics

- Well-wooded farmland landscape with rolling landform.
- Geologically diverse with rocks ranging from the Precambrian to the Jurassic and overlain by superficial Quaternary deposits.
- Mature oaks, mostly found within hedgerows, together with ancient woodlands, and plantation woodlands that often date from the time of enclosure. Woodlands include historic coppice bounded by woodbanks.
- Narrow, meandering clay river valleys with long river meadows; the River Blythe SSSI lying between the cities of Coventry and Birmingham is a good example of this.
- Numerous areas of former wood-pasture with large, old, oak trees often associated with isolated remnants of more extensive heathlands. Village greens/commons have a strong association with remnant lowland heath. Fragmented heathland persists on poorer soils in central and northern areas.
- Diverse field patterns, ranging from well hedged, irregular fields and small woodlands that contrast with larger semi regular fields on former deer park estates, such as, Packington Hall and Stoneleigh Park.
- Complex and contrasting settlement pattern with some densely populated where traditional settlements have amalgamated to form the major West Midlands conurbation while some settlements remain distinct and relatively well dispersed.
- North-eastern industrial area based around former Warwickshire coalfield, with distinctive colliery settlements. North-western area dominated by urban development and associated urban edge landscapes such as managed greenspace, for example allotments, gardens, parks, golf courses (rough areas) and public open spaces; playing fields, churchyards, cemeteries and institutional grounds (schools, hospitals).
- Transport infrastructure, the M42, M40, M6 and M5 are major transport corridors that sit within the landscape of this NCA.
- Shakespeare's 'Forest of Arden', featured in 'As You Like It', is still reflected through the woodland cover, mature oaks, small ancient woodlands and former wood pasture.

Demonstrating the undulating landscape between Coventry and Birmingham - looking west along A45, near to Meriden.

An example of the meadering clay river valleys with long river meadows typical of the Arden landscape.

Arden today

Arden is a true mix of urban and rural with the heavily urbanised centres of Birmingham, Coventry, Redditch, Nuneaton and Tamworth set within and around a landscape of farmland, parkland and former wood pasture. Traditionally known as the land lying between the River Tame, Birmingham and the River Avon in Warwickshire, it also extends into north Worcestershire where some of the highest ground can be found. Mining and post industrial urbanisation is prominent in the landscape to the north-east between Nuneaton and Tamworth.

This is Shakespeare's 'Forest of Arden', historically a region of woodlands and heaths, which today remains one of the more wooded parts of the region. There are many mature hedgerow oaks, numerous patches of ancient woodland and parks containing remnants of wood-pasture. The association with former common and heathland also imparts a strong unity, reflected by the widespread occurrence of heathland vegetation and roadside bracken. The larger commons have been enclosed within a rectilinear pattern of larger fields, straight roads and hedges, but there are still smaller commons as well as extensive areas of farmland, characterised by small, irregular fields, dense, thick hedges, winding lanes and trackways. Brick and timber are common building materials throughout the area. Common oaks are still the dominant tree species and can be found both within towns and villages and as part of the hedgerow systems. The woods themselves range from 20th century plantations to species-rich ancient woodlands. Some of the woodlands contain important populations of lichens and fungi. Oak and ash wood with bracken, bramble and dog's mercury are also particularly distinctive.

Many of the modern towns and cities in Arden still retain a historic core.

Light, sandy soils predominate in the north of the NCA. Heavier clay soils and loams occur extensively in central and southern Arden. The poorer sandy soils are acidic and, when cleared of woodland, often became leached, giving rise to heathland vegetation. The area is drained to the south by the rivers Arrow, Alne and Avon, and to the north by the rivers Tame/Blythe and Anker. The River Tame joins with the River Rea to create a wide, shallow valley to the east of Birmingham. Threading through the landscape, the river valleys are more fertile and enclosed. They are typically rather narrow and meandering water bodies, with long river meadows on the floodplain, riverside trees such as alder are frequently pollarded, and blocks of scrub as well as the remains of mills, pools and leats remain as features within the landscape. Arable farmland extends into the more fertile southern river valleys. Purple moor grass, meadowsweet and soft rush are some of the plant species that dominate the marshy grassland. Heron and yellow wagtail are among the bird species that can often be seen here. Relatively abundant surface water in the NCA has been managed through the creation of dammed fishponds and millponds and their leats.

Many of Arden's parklands are studded with ancient oaks .

The heartland of the area is made up of a landscape of hedged, irregular fields and small woodlands. Narrow, often sunken lanes link scattered farms and there is a real sense of being closed in with restricted views. This contrasts with the more open views, gentle rolling pasture and regular, rectilinear fields around the southern edge of Birmingham. Deer parks were once common in the area and there is still an ancient wooded appearance to these sites. Veteran trees provide valuable habitats for invertebrates, noble chafer (green beetle) lichens and bats. Areas with a distinct parkland character can be found between Wroxall and Stoneleigh.

The landscape through time

Arden is on the south-easterly portion of the Midlands plateau and is geologically diverse possessing rocks from the Precambrian to the Jurassic periods. Physically and geologically, Arden has three constituent parts. The largest area, the Knowle basin, is relatively low lying and separates the higher ground of the Warwickshire coalfield in the east and the eastern edge of the South Staffordshire (Black Country) coalfield to the west.

The predominant bedrock of the Knowle basin is the Triassic Mercia Mudstone Group, which has been extensively used as a source of brickclay. This is overlain by extensive superficial deposits of till and glacio-fluvial sands and gravels from the last ice age. It is an area of gently rolling country with the only features arising from thin intermittent sandstone layers, within the mudstones, known as 'skerries'. In the upper part of the sequence, the Arden Sandstone gives rise to the higher ground between Warwick, Redditch and Solihull and around Inkberrow and Alcester.

Lower members of the Triassic, the Sherwood Sandstone Group, comprise predominantly hard sandstones and conglomerates and give rise to prominent ridges and hills on the north-western side of Birmingham and between Hagley and Bromsgrove. The Bromsgrove Formation has been used for building stone locally and is found in very characteristic churches, walls and older houses.

The western side of Arden is elevated by faulting and is an extension of the South Staffordshire coalfield which dominates the adjoining Cannock Chase and Cank Wood NCA. Complex folding and faulting has produced the striking series of hills including the Lickey Hills and Clent Hills, dominated by late Carboniferous and Permian rocks with small, but important, elements of Silurian, Ordovician and Precambrian.

The Warwickshire coalfield in the east creates a distinct high ground and pronounced edge to the Knowle basin and is characterised by harder red sandstones (locally used for building) of Carboniferous - Permian age overlying the productive coal seams of the Warwickshire coalfield. Folding and faulting has given rise to a complex sequence of older Cambrian sediments with Ordovician and Precambrian igneous rocks which form the Nuneaton ridge.

Ice age deposits are found over most of the area but are mostly concentrated in the Knowle basin where they have been extensively worked for sands and gravel. Alluvium and river terrace deposits as well as the harder Silurian, Ordovician, Cambrian and Precambrian rocks found in the west and east (around Nuneaton) have also provided important sources of aggregates.

Arden holds a number of prehistoric sites. Many of these are buried remains but there are some visible prehistoric features including several burnt mounds, Hob Ditch earthwork and hillforts such as Barnmoor (Claverdon).

Roman roads whose lines are followed by modern roads are also a prominent feature. Roman field systems are evident in places like Kings Norton where hedges still follow the old roman boundaries. Livestock rearing was important in the Roman period along with the woodland resource being used for the tile and pottery industries.

The 10th century saw the development of market towns such as Warwick with its medieval castle, sitting on the River Avon. Kenilworth Castle, one of the great ruinous castles of England, was established around 1125.

Extensive woodland cover probably remained over the area into the Anglo-Saxon period perhaps as late as the 11th century. Many manorial deer parks were established in the 12th and 14th centuries and this continued into the 15th century, the remains of which can be seen as ancient wood pasture landscape today.

Enclosure began in the south of the area in the 18th century. In the Blythe Valley, which traditionally had open fields, enclosure was not completed until the 19th century. Extensive tracts of planned enclosure can be found in areas that were until this time common or heath. It can also be found on the plateau summits where the heavy clay soils made cultivation difficult.

Kenilworth Castle, built using local stone.

Arden has an extensive canal network that makes a link between the urban and rural areas of this NCA.

Birmingham and Coventry started out as medieval towns that, due to the presence of the raw materials in the natural resources such as the coal of the Warwickshire coalfields as well as the associated Carboniferous ironstones, developed to be at the centre of the Industrial Revolution. Birmingham had a broad economic base with a variety of highly skilled trades such as glass making, jewellery, gun smiths, pin making and car industries. Coventry also became famed for its car industries and its earlier ribbon making, watch, clock, bicycle and sewing machine manufacturing.

The 19th century also saw growth in the coal mining industries. The north-eastern side of the area saw the landscape impact of this industry with the development of mining villages, which continued into the 20th century. There was also great change in the landscape with the urban development of Birmingham and extensively the canal network. Birmingham developed in a fairly compact way from its original medieval centre and small-scale medieval industries. A ring of encircling suburbs began to emerge after the arrival of the railways and this pattern of concentric development continued through the 20th century. The result is a rich variety of suburban types from the model village of Bournville to tower blocks.

Today there are a number of changes in the character of the area with many historic Arden farmsteads converted into wealthy residences and the land being used for grazing, hobby farming and equestrian use. The pressure of development also continues with new transport schemes continuing to impact upon the landscape, along with the expansion of smaller villages, towns, Birmingham and Coventry.

Ecosystem services

The following section seeks to identify the services offered by the landscape. A more expansive list of ecosystem services associated with this NCA is included in the Analysis section.

The Arden NCA provides a wide range of benefits to society. Each are derived from the attributes and processes (both natural and cultural features) within the area. These benefits are known collectively as 'ecosystem services'. The predominant services are summarised below (under the constituent headings) Further information on ecosystem services provided in the Arden NCA is contained in the 'Analysis' section of this document.

Provisioning services (food, fibre and water supply)

- **Food provision:** Light, sandy soils predominate in the north with heavier clay soils and loams occurring extensively in central and southern Arden. The majority of the soil is grade 3. In 2009, over 30 per cent of Arden's holdings were lowland grazing livestock. Farms classified as 'other' (which will include smallholdings) 27 per cent; cereal farms 20 per cent; mixed farms 6.9 per cent.The area produces dairy and arable food crops alongside vegetables, pork, poultry and eggs but not on a large scale.

- **Timber provision:** The NCA contains 11,876 ha of woodland (8 per cent of the total area). 3,770 ha (3 per cent of the NCA) is broadleaved woodland.

- **Water availability:** Water provision comes from three sources in this NCA, reservoirs, major aquifers and rivers. One of the two main aquifers is currently over abstracted and the other is over licensed and has no further water available for abstraction. The River Arrow and River Avon have no water available for further abstraction and the River Sowe and the River Blythe are over licensed. However, the River Cole has water available.

Regulating services (water purification, air quality maintenance and climate regulation)

- **Climate regulation:** The majority of the NCA has a low soil carbon content of 0 to 5 per cent; however, around Birmingham, carbon content increases to 5 to 10 per cent. Carbon content is likely to be higher under the more than 11,800 ha of woodland within the NCA, as well as under the more than 1,000 ha of grazing marsh, grassland, fen, reedbeds, and heathland.

- **Regulating water quality:** In the south of the NCA, surface water is generally of 'moderate' ecological status although there are some reaches of 'poor' quality around Birmingham and Coventry. Also in the south of the NCA there are some river lengths with 'good' chemical status. The chemical status of the groundwater sources is 'good' in the south but 'poor' again around Birmingham and Coventry.

There is an opportunity at the old mine and quarry sites to develop them for nature conservation and recreational use.

- **Regulating water flow:** Tamworth is at risk of flooding from the rivers Tame, Anker and Bourne Brook. In Birmingham, flood risk from the rivers Tame and Rea is high. In Coventry there is a relatively high risk of flooding from the rivers Sowe and Sherbourne.

- **Regulating soil quality:** The slowly permeable, seasonally wet, slightly acid but base-rich loamy and clayey soils (36 per cent) of the NCA may suffer compaction and or capping as they are easily damaged when wet. Also the slightly acid loamy and clayey soils with impeded drainage (26 per cent) of the NCA are easily poached by livestock and compacted by machinery when wet.

- **Regulating soil erosion:** Nearly 60 per cent of the NCA is considered to be at low risk of soil erosion. About 14 per cent of the NCA has high risk of soil erosion; this is associated with the moderately or steeply sloping land where cultivated or bare soil is exposed and where organic matter levels are low following continuous arable cultivation or where soils have become compacted.

Cultural services (inspiration, education and wellbeing)

- **Recreation:** Most of the recreational opportunity in Arden is formalised with numerous urban parks and golf courses. There is less than 1 per cent of open access land and a network of rights of way density of 1.35 per km. There is public access to numerous small woodlands and the canals, rivers and reservoirs offer opportunities for walking, cycling and water sports. The network of lanes is frequently used by horseriders and cyclists.

- **Sense of place/inspiration:** Associations with Shakespeare's 'Forest of Arden', featured in 'As You Like It' are still notable through the woodland cover, hedgerow oaks, small ancient woodlands and former wood pasture. The Elizabethan connection has been emphasised by Sir Walter Scott's novel

Kenilworth. In a more recent period, at the western edge of the area, Hagley and Leasowes at Halesowen are historic parks which have formed a focus for writers and designers, such as William Shenstone at Leasowes and James Thompson at Hagley. North Arden features strongly in George Eliot's novels. Tolkien's home at Hall Green is reflected in the fantasy landscape of his books.

- **Tranquillity:** Despite the major road and motorway network, a sense of tranquillity can still be found in the woodlands, sunken lanes, narrow river valleys and enclosed urban landscapes.

- **Sense of history:** Manorial deer parks, remnants of wood pasture, ancient oak woodland, historic field patterns, historic farm buildings, medieval moated sites, parkland landscapes, distinctive mining villages and former colliery sites all reflect the history of the landscape. Warwick Castle and Kenilworth Castle are also dominate features, built using locally found building materials, in the south of the NCA.

- **Biodiversity:** The internationally designated site in the NCA, Ensor's Pool SAC (4 ha) in Nuneaton, is designated for supporting a very large population of white-clawed crayfish. There are 56 SSSI, totalling less than 1 per cent of the NCA area. The majority of these (87 per cent) are in favourable or recovering condition; 12 per cent are in unfavourable condition. There are 1,126 Local Wildlife Sites in Arden, covering 10,863 ha, which is 7.6 per cent of the NCA.

- **Geodiversity:** There are 15 nationally designated geological sites within the NCA and 68 local sites, which are of great value for education and research. Many of the nationally designated sites are quarry or gravel pits. The geological diversity of this NCA gives a strong sense of place (higher ground to the west (Lickey and Clent) and east (Nuneaton)) and the rolling landscape of the central basin which is dominated by Triassic rocks.

Over hedge and cornfield with Daw Mill Colliery in the background.

Statements of Environmental Opportunity

SEO 1: Manage and enhance the valuable woodlands, hedgerows, heathlands, distinctive field boundaries and enclosure patterns throughout the NCA, retaining the historic contrast between different areas while balancing the needs for timber, biomass production, climate regulation, biodiversity and recreation.

For example, by:

- Managing small woodlands, semi-natural woodland and ancient woodland to maintain pockets of tranquillity and enhance biodiversity value and where appropriate re-plant new locally characteristic woodlands for wood fuel/biomass.
- Managing and maintaining the existing resource of 'big historic trees' in urban areas and support schemes to expand urban tree planting to support urban biodiversity and increase sense of place and history.
- Managing hedgerows in traditional local style to enhance landscape character and improve biodiversity value.
- Improving existing fragmented heathlands in southern Arden and Arden Parklands.

SEO 2: Create new networks of woodlands, heathlands and green infrastructure, linking urban areas like Birmingham and Coventry with the wider countryside to increase biodiversity, recreation and the potential for biomass and the regulation of climate.

For example, by:

- Expansion of urban tree planting to support urban biodiversity, landscape character and sense of place and history.
- Targeting expansion of woodland for the benefit of biodiversity and landscape, particularly where it can link isolated woodland blocks and increase habitat connectivity.
- Ensuring that the right type of tree is planted in the right location to maximise the benefits for water quality, climate regulation, soil erosion control, tranquillity and sense of place.
- Planting new hedgerows, especially in the north-eastern part of the NCA, using species of local provenance, planting standard hedgerow trees primarily oak, to maintain the distinctive character of the area. Maintain associated grassland buffer strips and improve habitat connectivity, particularly where this can assist in regulating soil erosion.
- Planning and creating new and improved links between urban areas, green belt and the wider countryside or major open spaces within and/or near the conurbation especially in and around Birmingham, Coventry and north Solihull.
- Enhance urban areas and fringes through sympathetic building and landscape design.
- Creating new green infrastructure with associated habitat creation and new public access especially around old mining and quarry sites in the central and north-east areas of the NCA.
- Maintaining and improving the existing rights of way network such as the Heart of England Way, cycle routes and access land.
- Improving links to or within the wider network of canal towpaths such as the Grand Union and Avon Canal walks and cycle routes.

SEO 3: Conserve and enhance Arden's strong geological, industrial, and cultural resource, to increase public access, enjoyment, recreation and to retain a sense of place and history.

For example, by:

- Conserving, enhancing and making accessible the network of geological sites, ensuring the importance of the man-made sites such as disused quarries, road, rail and canal cuttings.
- Widening the understanding of the role of geodiversity in the NCA, in particular, its connection with biodiversity, landscape character, industrial and cultural heritage.
- Conserving and enhancing archaeological features such as moated sites and archaeology associated with the manufacturing and mining industries particularly in relation to the Warwickshire coalfield and the canal network; promote access and awareness.
- Protecting and managing historic wood pasture, parklands and urban parks to conserve significant historic landscapes and important features and habitats such as veteran and urban trees and the associated invertebrate populations.
- Conserving historic farmsteads, the buildings and their surrounding landscapes particularly where new uses are being considered.
- Capitalising on the links made in literature to the Arden landscape, such as links with Shakespear, using this as a tool to promote the conservation and enhancement of the landscape described.

SEO 4: Enhance the value of Arden's aquatic features such as the characteristic river valleys, meadows and standing water areas like Bittell Reservoirs to increase resource protection, such as regulating soil erosion, soil quality and water quality.

For example, by:

- Managing and restoring habitats including floodplain grazing marsh associated with river valleys, particularly the Tame, Blyth and Arrow.
- Reducing sources of diffuse pollution into rivers, particularly in catchments of the Trent, Tame and Blythe and standing open water habitats such as Bittell Reservoirs.
- Continuing to develop the growing nature conservation and recreational resource of old mine and quarry sites such as Hartshill and Alvecote wetlands.

Supporting document 1: Key facts and data

Total area: 143,425 ha

1. Landscape and nature conservation designations

There are no National Parks or Areas of Outstanding Natural Beauty in this NCA.

Source: Natural England (2011)

1.1 Designated nature conservation sites

The NCA includes the following statutory nature conservation designations:

Tier	Designation	Name	Area (ha)	Percentage of NCA
International	n/a	n/a	0	0
European	Special Protection Area (SPA)	n/a	0	0
	Special Area of Conservation (SAC)	Ensors Pool	4	<1
National	National Nature Reserve (NNR)	Chaddesley Woods	60	<1
National	Site of Special Scientific Interest (SSSI)	A total of 56 sites wholly or partly within the NCA	1,115	1

Source: Natural England (2011)

Please note: (i) Designated areas may overlap (ii) all figures are cut to Mean High Water Line, designations that span coastal areas/views below this line will not be included.

All of the Ensors Pool SAC is within a SSSI.

There are 1,126 Local sites in Arden NCA covering 10,863 ha which is 8 per cent of the NCA.

Source: Natural England (2011)

- Details of individual Sites of Special Scientific Interest can be searched at: http://www.sssi.naturalengland.org.uk/Special/sssi/search.cfm
- Details of Local Nature Reserves (LNR) can be searched: http://www.lnr.naturalengland.org.uk/Special/lnr/lnr_search.asp
- Maps showing locations of Statutory sites can be found at: http://magic.defra.gov.uk – select 'Designations/Land-Based Designations/ Statutory'

1.2 Condition of designated sites

A breakdown of SSSI condition as of March 2011 is as follows:

SSSI condition category	Area (ha)	Percentage of SSSI in category condition
Unfavourable declining	3	<1
Favourable	835	76
Unfavourable no change	123	11
Unfavourable recovering	141	13

Source: Natural England (March 2011)

Details of SSSI condition can be searched at: http://www.sssi.naturalengland.org.uk/Special/sssi/reportIndex.cfm

2. Landform, geology and soils

2.1 Elevation

Land within the NCA ranges from 31 m above sea level to a maximum of 315 m. The mean average elevation is 114m.

Source: Natural England (2010)

2.2 Landform and process

Arden is a well wooded landscape with a rolling landform. The northern and central parts of the area lie across the eastern part of the Birmingham plateau, which comprises two uplifted blocks of older Palaeozoic strata, the south Staffordshire and the Warwickshire coalfields. The central area (Knowle Basin) is lower lying than the adjacent Palaeozoic area and is largely underlain by Mercia Mudstones and covered by glacial sands, gravels or till. The southern part of the area is underlain by Mercia Mudstones, with outcrops of Arden Sandstone forming prominent escarpments.

Source: Arden Countryside Character Area Description

2.3 Bedrock geology

Lower members of the Triassic rocks, the Sherwood Group, which are predominantly sandstones and conglomerates, outcrop on the north-western side of Birmingham and between Hagley and Bromsgrove in the south-western part of the area where they give rise to more marked ridges and hills. The elevated landform of the Warwickshire coalfield is controlled by the harder mostly red sandstones of Carboniferous age (Upper Coal Measures) and Permian age. To the west the coalfield rocks form a pronounced edge to the Knowle basin. The Nuneaton ridge rocks form a steep scarp to the neighbouring NCA. They are scientifically important and the Cambrian shales in particular have a distinctive trilobite fauna.

Source: Geological Narrative West Midlands Geodiversity Partnership

Looking towards Walton Hill, near Clent, the highest point in the NCA.

2.4 Superficial deposits

Ice-age deposits are found over most of the area but are particularly concentrated in the Knowle basin where they have been extensively worked for sands and gravel. Alluvium and river terrace deposits have also been important sources of aggregates. Scientifically these drift deposits have played a major contribution into our current understanding of ice-age chronology and environments.

Source: Geological Narrative West Midlands Geodiversity Partnership

2.5 Designated geological sites

Tier	Designation	Number
National	Geological Site of Special Scientific Interest (SSSI)	16
National	Mixed Interest SSSI	0
Local	Local Geological Sites	68

Source: Natural England (2011)

Details of individual Sites of Special Scientific Interest can be searched at:
http://www.sssi.naturalengland.org.uk/Special/sssi/search.cfm

2.6 Soils and Agricultural Land Classification

Light, sandy soils predominate in the north. Heavier clay soils and loams occur extensively in central and southern Arden. The poorer sandy soils are acidic, and when cleared of woodland, often become leached, giving rise to heathland vegetation. On the heavier soils, woodland clearances were usually succeeded by the development of pasture grasslands and wood pasture.

Source: Arden Countryside Character Area Description

The main grades of agricultural land in the NCA are broken down as follows (as a proportion of total land area):

Agricultural Land Classification	Area (ha)	Percentage of NCA
Grade 1	427	<1
Grade 2	9,492	7
Grade 3	80,827	56
Grade 4	10,982	8
Grade 5	n/a	n/a
Non-agricultural	1,884	1
Urban	39,813	28

Source: Natural England (2010)

Maps showing locations of sites can be found at:
http://magic.defra.gov.uk – select 'Landscape' (shows ALC and 27 types of soils).

3. Key waterbodies and catchments

3.1 Major rivers/canals

The following major rivers/canals (by length) have been identified in this NCA.

River Name	Length in NCA (km)
River Blythe	32
River Cole	31
River Avon	20
River Alne	19
River Arrow	17
River Sowe	14
River Tame	13

Source: Natural England (2010)

Please note: other significant rivers (by volume) may also occur. These are not listed where the length within the NCA is short.

This area is drained to the south by the rivers Arrow and Alne. Lying within the River Severn catchment area these rivers flow into the River Avon. Draining to the north, the rivers Tame, Blythe and Anker sit within the River Humber catchment. The River Tame joins with the River Rea to create a wide, shallow valley to the east of Birmingham. The extensive canal network (including Grand Union, Coventry Canal and Worcester and Birmingham Canal) is a notable feature of the NCA, and contributes significantly to the drainage of the urban area.

3.2 Water quality

The total area of Nitrate Vulnerable Zone is 100 per cent of NCA.

Source: Natural England (2010)

3.3 Water Framework Directive

Maps are available from the Environment Agency showing current and projected future status of water bodies
http://maps.environment-agency.gov.uk/wiyby/wiybyController?ep=maptopics&lang=_e

4. Trees and woodlands

4.1 Total Woodland cover

The NCA contains 11,876 ha of woodland (8 per cent of the total area), of which 3 per cent is ancient woodland.

Source: Natural England (2010)

4.2 Distribution and size of woodland and trees in the landscape

This ancient woodland resource can often be found in significant pockets across the whole NCA, such as at the scarp south of Atherstone, west of Redditch, Lickey Hills. Mature hedgerow oaks scatter the area along with small ancient and plantation woodland sites. Manorial deer parks such as Stoneleigh Abbey and Packington Hall and Maxstoke park contain significant areas of wood pasture.

Source:Arden Countryside Character Area Description

4.3 Woodland types

A statistical breakdown of the area and type of woodland found across the NCA is detailed in the following table.

Area and proportion of different woodland types in the NCA (over 2 ha):

Woodland type	Area (ha)	Percentage of NCA
Broadleaved	9,804	7
Coniferous	1,399	1
Mixed	238	<1
Other	435	<1

Source: Forestry Commission (2011)

Area and proportion of ancient woodland and planted ancient woodland sites (PAWS) within the NCA.

Woodland type	Area (ha)	Percentage of NCA
Ancient semi-natural woodland	2,141	1
Ancient re-planted woodland (PAWS)	1,629	1

Source: Natural England (2004)

5. Boundary features and patterns

5.1 Boundary features

An ancient landscape pattern of hedgerows forms the traditional field boundaries. Within hedgerows mature hedgerow oaks form distinctive features.

Source: Arden Countryside Character Area description; Countryside Quality Counts (2003)

5.2 Field patterns

There are varied field patterns across this NCA. Smaller scale irregular fields derived from medieval woodlands clearance can be found close by to some of the high density dispersed settlements. The largest fields can be found in the broad river valleys and in the south which is dominated by big estates from Warwick to the east of Birmingham.

Source: Natural Area Profile, Countryside Character Area description

6. Agriculture

The following data has been taken from the Agricultural Census linked to this NCA.

6.1 Farm type

In 2009, 366 lowland grazing livestock holdings (31 per cent); Farms classified as' other' (which will include smallholdings) number 313 (27 per cent); 239 cereal farms (20 per cent); 81 mixed farms (7 per cent). Trends between 2000 and 2009 show a decrease in the total number of holdings from 1,898 to 1,577 (a 17 per cent decrease). Trends also show a significant decrease in dairy farms (down from 112 to 56 – a decrease of 50 per cent), and mixed farming (down from 124 to 81 a decrease of 35 per cent). Lowland grazing livestock has increased slightly (9 per cent).

Source: Agricultural Census, Defra (2010)

6.2 Farm size

Farms of size 5 – 20 ha, are the most common, accounting for 32 per cent of holdings; followed by farms of size 20 – 50 ha, accounting for 22 per cent of holdings. Trends between 2000 and 2009 show a decrease in the numbers of all farm sizes except for holdings over 100 ha. This category made up 17 per cent of the total in 2009 – up from 14 per cent in 2000.

Source: Agricultural Census, Defra (2010)

6.3 Farm ownership

In 2009 total farm area within the NCA was 65,922 ha and owned land coverage was 7,064 ha. In 2000 total farm area was 67,587 ha and owned land was 42,072 ha.

Source: Agricultural Census, Defra (2010)

6.4 Land use

The dominant land use is grass and uncropped land, accounting for 34,490 hectares (52 per cent of farmed area). This is followed by cereals (19,467 or 29 per cent) and oilseed and other arable crops account for much of the remainder (approximately 7 per cent and 5 per cent each).

Source: Agricultural Census, Defra (2010)

6.5 Livestock numbers

Sheep are the most numerous livestock type (a total of 119,500 animals) followed by cattle (38,000) and pigs (12,700). In every case there has been a significant decrease in overall numbers between 2000 and 2009.

Source: Agricultural Census, Defra (2010)

6.6 Farm labour

The figures suggest that many of holdings are run by dedicated farmers or managers. These comprise some 60 per cent of the total work force. The total workforce has decreased by 19 per cent between 2000 (3,444) and 2009 (2,787). There has been a decrease of 31 per cent in the number of full time employees, and 9 per cent in part time employees between 2000 and 2009. Casual workers have also decreased by 61 per cent.

Source: Agricultural Census, Defra (2010)

Please note: (i) Some of the Census data is estimated by Defra so will not be accurate for every holding (ii) Data refers to Commercial Holdings only (iii) Data includes land outside of the NCA belonging to holdings whose centre point is within the NCA listed.

7. Key habitats and species

7.1 Habitat distribution/coverage

Remnant ancient woodland is a key feature in the NCA. Some of the woodlands contain important populations of small mammals such as Dormouse and Invertebrates such as 'false mocha' a rare moth, the larva of which feeds on oak leaves, lichens, bryophytes and fungi. There are several distinct areas of floodplain grazing marsh within Arden NCA. A priority species known to be present in this habitat is the 'mud snail', a species that is localised in its range. Bittell Reservoirs lie in the Upper Arrow Valley of north Worcestershire. These reservoirs form the largest area of open water in the county and represent one of the most important sites in the West Midlands for passage and wintering waders as well as other waterfowl, with over 200 species recorded. Post-industrial sites also provide a wide range of habitats. Derelict land provides opportunities for specialised plant and animal communities. Birmingham is known to be a stronghold for the black redstart, while the network of waterways provides a stronghold for the water vole.

Source: Midland Plateau Natural Area Profile

7.2 Priority habitats

The NCA contains the following areas of mapped priority habitats (as mapped by National Inventories). Footnotes denote local/expert interpretation. This will be used to inform future national inventory updates.

Priority habitat	Area (ha)	Percentage of NCA
Broadleaved mixed & yew woodland (Broad Habitat)	4,157	3
Coastal & floodplain grazing marsh	592	<1
Lowland Meadows	401	<1
Fens	82	<1
Purple moor grass & rush pasture	52	<1
Reedbeds	45	<1
Lowland dry acid grassland	44	<1
Lowland heathland	10	<1

Source: Natural England (2011)

- Maps showing locations of priority habitats are available at: http://magic.defra.gov.uk – Select 'Habitats and Species/Habitats'

7.3 Key species and assemblages of species

- Maps showing locations of some key species are available at: http://magic.defra.gov.uk – Select 'Habitats and Species/Habitats'
- Maps showing locations of S41 species are available at http://data.nbn.org.uk/

8. Settlement and development patterns

8.1 Settlement pattern

Thirty-two per cent of the area is urban. Total population of the area is 1,799,222. Birmingham dominates the north-west of the NCA, developing from a medieval centre with small-scale industries to concentric development with a range of surburban types through the 20th century. The north-east is an industrial area with distinctive colliery settlements. Elsewhere the pattern of settlement is scattered and dispersed. Major settlement populations can be found in the south-east of the area around Coventry, Kenilworth and Warwick and in the west, Redditch, Bromsgrove and Halesowen.

Source: Arden Countryside Character Area description; Countryside Quality Counts (2003)

8.2 Main settlements

The main settlements are: Birmingham; Coventry; Nuneaton Bromsgrove; Redditch; Tamworth; Warwick; Kenilworth. The total estimated population for this NCA (derived from ONS 2001 census data) is: 1,924,737.

Source: Arden Countryside Character Area description; Countryside Quality Counts (2003)

8.3 Local vernacular and building materials

Brick and timber is the material of many of the older buildings. The mining villages tend to be modern terraced housing situated on hill tops. In Birmingham many terracota bricks are present in 19th-century buildings. The Bromsgrove Formation (sandstone) has been used for building stone locally and is found in local churches, walls and older houses.

Source: Arden Countryside Character Area description; Countryside Quality Counts (2003)

9. Key historic sites and features

9.1 Origin of historic features

The town of Alcester in the south-west tip of the NCA was of some importance in Roman times. Strategically located at a junction between the Ryknild Street (Roman road) and the ancient Saltway from Droitwich and the Roman road from Stratford upon Avon, the Fosse Way. The 10th century saw the development of the market towns such as Warwick with the medieval castle, sitting on a bend in the River Avon, built as a wooden motte and bailey castle in 1068. The now familiar stone castle was built in the 12th century. The extensive woodland cover remained over the area in the Anglo-Saxon period as late as the 11th century. There was then a period of clearance and enclosure for arable and stock. The 12th and 14th centuries saw the establishment of manorial deer parks such as Stoneleigh Park and Packington Hall and this trend continued into the 15th century with formal houses and parklands for example Coughton Court and Baddesley Clinton.

Industrialisation of the Arrow Valley and Redditch in the 18th and 19th century was focused on the needle industry making use of the earlier water-powered corn mills. In the north-east of the NCA coal mining quickly developed in the 19th century. This was largely based on the location of canals and led to the development of coking and smelting industries and the development of other associated infrastructure (roads, rail).

Source: Draft Historic Profile, Countryside Quality Counts , Arden Countryside Character Area description

9.2 Designated historic assets

This NCA has the following historic designations:

- 37 Registered Parks and Gardens covering 2,448 ha.
- 0 Registered Battlefield/s covering 0 ha.
- 155 Scheduled Monuments.
- 4,932 Listed Buildings.

Source: Natural England (2010)

- More information is available at the following address: http://www.english-heritage.org.uk/caring/heritage-at-risk/
- http://www.english-heritage.org.uk/professional/protection/process/national-heritage-list-for-england/

10. Recreation and access

10.1 Public access

- 21 per cent of the NCA 3,166 ha is classified as being publically accessible.
- There are 1,929 km of Public Rights of Way at a density of 1.3 per km2.
- There are 0 National Trails within the NCA.

Sources: Natural England (2010)

The table below shows the breakdown of land which is publically accessible in perpetuity:

Access designation	Area (ha)	Percentage of NCA
National Trust (Accessible all year)	145	<1
Common Land	179	<1
Country Parks	1,297	1
CROW Access Land (Section 4 and 16)	478	<1
CROW Section 15	326	<1
Village Greens	15	<1
Doorstep Greens	4	<1
Forestry Commission Walkers Welcome Grants	668	<1
Local Nature Reserves (LNR)	688	<1
Millennium Greens	17	<1
Accessible National Nature Reserves (NNR)	60	<1
Agri-environment Scheme Access	14	<1
Woods for People	1,553	1

Sources: Natural England (2011)

Please note: Common Land refers to land included in the 1965 commons register; CROW = Countryside and Rights of Way Act 2000; OC and RCL = Open Country and Registered Common Land.

11. Experiential qualities

11.1 Tranquillity

Based on the CPRE map of tranquillity (2006) the highest scores for tranquillity are in very small areas to the north-east and south-west of the NCA in very rural areas. The lowest scores for tranquillity are the major conurbations for example Birmingham and Coventry. However, the majority of this NCA falls within areas considered to be least tranquil.

A breakdown of tranquillity values for this NCA are detailed in the table below:

Tranquillity	Score
Highest Value within NCA	26
Lowest Value within NCA	-132
Mean Value within NCA	-36

Sources: CPRE (2006)

- More information is available at the following address: http://www.cpre.org.uk/resources/countryside/tranquil-places

11.2 Intrusion

The 2007 Intrusion Map (CPRE) shows the extent to which rural landscapes are 'intruded on' from urban development, noise (primarily traffic noise), and other sources of visual and auditory intrusion. This shows that the intrusion results are similar to the tranquillity results with a high percentage of the disturbed land being the urban areas of Birmingham and Coventry and the substantial road network across the area particularly the M6 and M42. A breakdown of intrusion values for this NCA are detailed in the table below.

Intrusion category	1960s (%)	1990s (%)	2007 (%)	Percentage change (1960s-2007)
Disturbed	40	58	60	+20
Undisturbed	34	16	10	-24
Urban	26	26	30	+4

Sources: CPRE (2007)

Notable trends from the 1960s to 2007 are a significant decrease of 24 per cent in the proportion of undisturbed or intruded land during the 1960s to 2007 period matched by increases in urban and disturbed land

- More information is available at the following address: http://www.cpre.org.uk/resources/countryside/tranquil-places

12. Data sources

- British Geological Survey (2006)
- Natural Area Profiles, Natural England (published by English Nature 1993-1998)
- Countryside Character Descriptions, Natural England (regional volumes published by Countryside Commission/Countryside Agency 1998/1999)
- Joint Character Area GIS boundaries, Natural England (data created 2001)
- National Parks and AONBs GIS boundaries, Natural England (2006)
- Heritage Coast Boundaries, Natural England (2006)
- Agricultural Census June Survey, Defra (2000,2009)
- National Inventory of Woodland & Trees, Forestry Commission (2003)
- Countryside Quality Counts Draft Historic Profiles, English Heritage (2004)*
- Ancient Woodland Inventory, Natural England (2003)
- Priority Habitats GIS data, Natural England (March 2011)
- Special Areas of Conservation data, Natural England (data accessed in March 2011)
- Special Protection Areas data, Natural England (data accessed in March 2011)
- Ramsar sites data, Natural England (data accessed in March 2011)
- Sites of Special Scientific Interest, Natural England (data accessed in March 2011)
- Detailed River Network, Environment Agency (2008)
- Source protection zones, Environment Agency (2005)
- Registered Common Land GIS data, Natural England (2004)
- Open Country GIS data, Natural England (2004)
- Public Rights of Way Density, Defra (2011)
- National Trails, Natural England (2006)
- National Tranquillity Mapping data, CPRE (2007)
- Intrusion map data, CPRE (2007)
- Registered Battlefields, English Heritage (2005)
- Record of Scheduled Monuments, English Heritage (2006)
- Registered Parks and Gardens, English Heritage (2006)
- World Heritage Sites, English Heritage (2006)
- Incorporates Historic Landscape Characterisation and work for preliminary Historic Farmstead Character Statements (English Heritage/Countryside Agency 2006)

Please note all figures contained within the report have been rounded to the nearest unit. For this reason proportion figures will not (in all) cases add up to 100 per cent. The convention <1 has been used to denote values less than a whole unit.

Supporting document 2: Landscape change

Recent changes and trends

Trees and woodlands

- The character of the resource has been maintained, or is strengthening slowly but there has been a general lack of woodland management in many places.

- Across rural parts of this NCA and into neighbouring NCAs, there is an ambitious, programme to purchase land and create an extensive forest landscape, the "Forest of Dennis". This project has created over 400 ha of new woodland and aims to eventually create a further 4 to 8,000 ha.

Boundary features

- There has been loss and deterioration of hedges and hedgerow trees, the former particularly as a result of field amalgamation. Many hedgerows have fallen into disrepair through poor and or lack of management. The number of hedgerow trees has declined and there has been a failure to nurture new generations. However, recent stewardship schemes have led to some positive management of hedgerows and improvement in hedgerow quality.

Agriculture

- In 2009, over 30 per cent of farms were lowland grazing livestock holdings; Farms classified as 'other' (which include smallholdings) 27 per cent; cereal farms 20 per cent; mixed farms (7 per cent). Trends between 2000 and 2009 show a decrease in the total number of holdings from 1,898 to 1,577 (a 17 per cent decrease). Trends also show a significant decrease in dairy farms (down from 112 to 56, a decrease of 50 per cent), and mixed farming (down from 124 to 81, a decrease of 35 per cent). Lowland grazing livestock has increased slightly (9 per cent).

Settlement and development

- There is development pressure throughout the area. The majority of the NCA falls within the southern half of the West Midlands Green Belt, which extends around Coventry and Redditch and south to Stratford. Growth proposals seem to be focussed around the east of Birmingham and north Solihull. Coventry is an area previously designated as a growth point and there has been consideration of sustainable urban extensions into the green belt.

Semi-natural habitat

- Semi-natural habitats are limited in this NCA with less than 1 per cent designated for nature conservation. There is little evidence to show that there are agri-environment agreements for heathland management and restoration. The most extensive annual agri-environment agreements in 2003 were for lowland pastures on neutral/acid soils (487 ha) and regeneration of grassland/semi-natural vegetation (236 ha). Given the size of the area, this suggests the resource remains weakened.

Historic features

- In 1918 about 3 per cent of the Arden area was historic parkland, but by 1995 it is estimated that 54 per cent of that had been lost. Less than half of the remaining parkland is covered by a Historic Parkland Grant and only 12 per cent is included within an agri-environmental scheme. This suggests some neglect of an important resource.

- It should also be noted that only about 58 per cent of historic farm buildings remain unconverted of which the majority are intact structurally.

Rivers

- This area is drained to the south by the rivers Arrow and Alne. Laying within the River Severn catchment area, these rivers flow into the River Avon. Draining to the north, the rivers Tame, Blythe and Anker sit within the River Humber catchment. The River Tame joins with the River Rea to create a wide, shallow valley to the east of Birmingham.

Drivers of change

Climate change

Climate change is likely to result in:

- Periods of heavy rain that may destabilise slopes and adversely affect riparian habitats.
- Species migration out of Arden and loss of small or isolated habitats.
- Changes to the way the landscape looks, eg. different tree species/crops.
- Increased demand for renewable energy installations and cropping.
- Summer droughts leading to continued over abstraction from local rivers and the potential loss of the iconic hedgerow and mature oak trees.
- Increased risk of localised flooding.
- Agricultural change with the potential for new crops.

Other key drivers

- There is likely to be increased demand for food production in the future as a result of a national drive for greater self-sufficiency in food.
- Continuing development pressure in and around the Birmingham and Coventry conurbations and outlying towns. Opportunities for good, sustainable design reflecting local settlement patterns, green infrastructure and local character reflected in design and materials.
- Potential for new transport infrastructure including railways. There may be an opportunity to manage proposals to ensure best outcomes for the environment.
- Associated potential for new green infrastructure building upon the network of sites in the urban fringe.
- Continued demand for sand and clay from existing quarries, and possible planning applications for expansion.
- Increased demand for waste disposal and recreational facilities around the edge of the conurbation.
- Further agriculture change with the possibility of increased area under intense arable production to meet food production needs.
- Potential for an increase in biomass production.

Supporting document 3: Analysis supporting Statements of Environmental Opportunity

The following analysis section focuses on a selection of the key provisioning, regulating and cultural ecosystem goods and services for this NCA. These are underpinned by supporting services such as photosynthesis, nutrient cycling, soil formation and evapo-transpiration. Supporting services perform an essential role in ensuring the availability of all ecosystem services.

Biodiversity and geodiversity are crucial in supporting the full range of ecosystem services provided by this landscape. Wildlife and geologically-rich landscapes are also of cultural value and are included in this section of the analysis. This analysis shows the projected impact of Statements of Environmental Opportunity on the value of nominated ecosystem services within this landscape.

An example of the meadering clay river valleys with long river meadows typical of the Arden landscape.

Statement of Environmental Opportunity	Ecosystem service																	
	Food provision	Timber provision	Water availability	Genetic diversity	Biomass energy	Climate regulation	Regulating water quality	Regulating water flow	Regulating soil quality	Regulating soil erosion	Pollination	Pest regulation	Regulating coastal erosion	Sense of place / inspiration	Sense of history	Tranquillity	Recreation	Biodiversity	Geodiversity
SEO 1: Manage and enhance the valuable woodlands, hedgerows, heathlands, distinctive field boundaries and enclosure patterns throughout the NCA, retaining the historic contrast between different areas while balancing the needs for timber, biomass production, climate regulation, biodiversity and recreation.	↘ **	↑ **	↔ *	↗ *	↑ **	↑ **	↗ *	o *	↗ *	↗ **	↑ *	↗ *	n/a	↑ **	↑ **	↗ **	↗ **	↑ **	o *
SEO 2: Create new networks of woodlands, heathlands and green infrastructure, linking urban areas like Birmingham and Coventry with the wider countryside to increase biodiversity, recreation and the potential for biomass and the regulation of climate.	↘ *	↑ *	o *	↗ *	↑ *	↑ **	↗ *	o *	↗ *	↗ *	↑ *	↗ *	n/a	↑ **	↔ *	↗ *	↗ **	↗ **	o *
SEO 3: Conserve and enhance Arden's cultural and geological resource, the links to Shakespeare and the geological designated sites, to increase public access, enjoyment and recreation.	↔ *	↔ *	↔ *	↔ *	↔ *	↔ *	↔ *	o *	↔ *	↔ *	↔ *	↔ *	n/a	↑ **	↑ **	↔ *	↗ *	↗ **	↗ **
SEO 4: Enhance the value of Arden's aquatic features such as the characteristic river valleys, meadows and standing water areas like Bittell Reservoirs to increase resource protection, such as soil erosion, soil quality and water quality.	↘ *	↔ *	↗ *	↗ *	↗ *	↑ *	↗ **	↗ **	↗ *	↗ **	↗ *	↗ *	n/a	↗ **	↔ **	↗ *	↗ *	↑ **	o *

Note: Arrows shown in the table above indicate anticipated effect on service delivery ↑ = Increase ↗ = Slight Increase ↔ = No change ↘ = Slight Decrease ↓ = Decrease.
Asterisks denote confidence in projection (*low **medium ***high) O = symbol denotes where insufficient information on the likely effect is available .

Dark plum = national importance; mid plum = regional importance; light plum = local importance

Landscape attributes

Landscape attribute	Justification for selection
Mature hedgerow oaks and hedgerows that mark many of the field boundaries.	■ Evidence to suggest loss and deterioration of oak trees and hedgerows. Many have fallen into disrepair through poor management or abandonment. Numbers on the decline and failure to nurture new generations. ■ Veteran oak trees with obvious cavities, splits or holes may provide important roost sites for bats such as Soprano pipistrelle bats and potential nest sites for birds. ■ Mature oak trees provide important food plant for rare priority species such as false mocha moths that feed on oak leaves. ■ Defining feature across whole area.
Ancient and plantation woodlands scattered throughout the area including ancient coppice with woodbanks.	■ This National Character Area (NCA) has woodland covering 8 per cent of the NCA and ancient woodland covering 3 per cent, making up nearly half of all woodland cover. ■ Woodland is primarily found in small isolated pockets well dispersed throughout the area. ■ Broadleaved woodlands support a range of priority plant species such as the narrow leaved helleborine and spreading bellflower. Records show that the there are two main populations for these two species in the UK; in the West Midlands with very good numbers in Arden, and on the Welsh borders. This priority species is regarded as threatened and consideration should be given to expansion of habitat.
The river valleys and associated narrow alluvial floodplains of the rivers and their habitats of grazing marsh and lowland meadows.	■ The river valleys cut through the rolling landscape, providing distinctive local landscapes and hosting remnant areas of important wetland habitat. ■ Priority habitats include wet woodlands, floodplain grazing marsh and lowland meadows.

Landscape attribute	Justification for selection
Complex and contrasting settlement pattern with densely populated urban areas such as Birmingham and Coventry. Others relatively dispersed.	■ 32 per cent of the area is urban. Main urban settlements are located around the edge of NCA. 83 per cent of NCA is green belt. ■ Villages are mainly found along river valleys. ■ Farmsteads are mainly isolated. ■ Transport infrastructure of M42, M5, M6 and M40 motorways. ■ Former and existing mining settlements, red brick terraced housing.
Contrasting with the smaller, well hedged fields are the larger more regular fields of the former deer parks and estates.	■ Large country houses and mature parkland estates such as Packington Hall, Stoneleigh Abbey and Arbury.
Heathland remnants particularly on the poorer soils.	■ Heathland remnants found in roadside hedgerows particularly in southern Arden. ■ Small, fragmented heathland found in urban, central and northern areas.

Landscape opportunities

- Conserve, enhance and restore the area's ancient landscape pattern of field boundaries, historic (including farm) buildings, moated sites, parkland and pasture and reinforce its well wooded character.
- Protect and manage woodlands particularly ancient woodlands and wood pasture to maintain the character of Arden.
- Manage and restore hedgerows especially in the north-eastern part of the area (enclosure patterns) and restore parkland, ancient trees and stream side trees plus manage and replace in–field trees and hedgerow trees.
- Maintain and restore areas of heathland particularly in southern Arden, Arden Parklands and Birmingham Hills, lowland meadows and pastures and floodplain grazing marshes.
- Manage arable cultivation to encourage rare arable plants and range-restricted farmland birds and mammals, following appropriate management options under Entry Level Stewardship.
- Restore habitats associated with river valleys particularly the Blythe and Tame.
- Create new green infrastructure with associated habitat creation and new public access on former mining sites and close to urban populations in the West Midlands Green Belt.

Frequent hedgerow oaks are a typical feature of the Arden landscape.

Ecosystem Service analysis

The following section shows the analysis used to determine key Ecosystem Service opportunities within the area. These opportunities have been combined with the analysis of landscape opportunities to create Statements of Environmental Opportunity.

Please note that the following analysis is based upon available data and current understanding of ecosystem services. It does not represent a comprehensive local assessment. Quality and quantity of data for each service is variable locally and many of the services listed are not yet fully researched or understood. Therefore analysis and opportunities may change upon publication of further evidence and better understanding of the inter-relationship between services at a local level.

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Food provision	Soils Livestock Mixed and cereal farms	Light, sandy soils predominate in the north with heavier clay soils and loams occurring extensively in central and southern Arden the majority of the soil is grade 3. In 2009, over 30 per cent of Arden's holdings were lowland grazing livestock. Farms classified as 'other' (which will include smallholdings) 27 per cent; cereal farms 20 per cent; mixed farms 6.9 per cent. The area produces dairy and arable food crops alongside vegetables, pork, poultry, eggs but not on a large scale.	Local	Expansion of food provision within the NCA could lead to increased production but could lead to less biodiversity and pollination sources, increase pressure on water availability (required for irrigation). It may also possibly have a huge impact on the character/sense of place of the landscape with uncultivated land being put into production.	There is scope to increase food provision but balance needs to be struck to ensure biodiversity/ water availability and other services do not suffer negative impacts.	**Food provision**
Timber provision	Small woodlands Mature timber Ancient woodlands	The NCA contains 11,876 ha of woodland (8 per cent of the total area). 3 per cent of that resource is ancient woodland.	Local	Provision is currently low but it could be increased if new sites are planted or existing sites come into management. This would also increase climate regulation through carbon sequestration and local heating effects. It could provide increased opportunities for biodiversity and recreation if planted in appropriate locations. Woodland is a very strong key feature of Arden and new planting would enhance this sense of place.	Opportunity to manage the many under-managed broadleaved woodlands in this NCA to provide timber and to encourage new woodlands in appropriate areas to provide biodiversity connectivity and increase recreation provision.	**Timber provision** **Biodiversity** **Recreation** **Climate regulation** **Sense of place/ inspiration** **Sense of history**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Biomass energy	Small woodlands Existing woodland cover (8 per cent of NCA)	There is currently limited potential for the provision of biomass through bringing unmanaged woodland under management. There is generally a high potential yield for miscanthus, and a medium or high potential yield for short rotation coppice (SRC) in the NCA.[4] For information on the potential landscape impacts of biomass plantings within the NCA, refer to the tables on the Natural England website. http://www.naturalengland.org.uk/ourwork/farming/funding/ecs/sitings/default.aspx	Local	Biomass potential is currently low. However the area has medium or high potential for SRC. Increased provision of SRC for fuel has the potential to increase climate regulation, but could decrease provision of future food if placed on farmed areas or on biodiversity if placed on areas of non-agricultural production. Major expansion could also affect sense of place.	There is an opportunity to increase production of biomass through introducing management in currently unmanaged woodlands. There is also an opportunity for small-scale biomass production through planting on sites including, for example, small parcels of land isolated by development and closed quarry or mining sites. There is also an opportunity to plant new broadleaf woodland or short rotation coppice where extension or introduction of woodland character would be desirable, avoiding other priority habitats and historical features.	**Biomass energy** **Climate regulation** **Biodiversity**

[4]Environment Agency, NSRI National Soils Map for England and Wales, January 2009.

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Water availability	Reservoirs, aquifers and rivers	The major metropolitan areas of Birmingham, Coventry and Redditch places considerable pressure on water resources. The Bartley, Frankley and Bittel reservoirs in south-west Birmingham provide drinking water for Birmingham. The major sandstone aquifers underlying the south of the NCA are the Triassic Sandstone Aquifer, over-abstracted and the Avon Confirmed Aquifer, which is over licensed and no water available for abstraction.	Regional	Increasing water availability (through greater capture/infiltration) and further management of abstraction is likely to increase wetland biodiversity and improve quality. Greater water availability could also increase agricultural outputs at times when water for irrigation is limited, for example, during droughts.	There is an opportunity to manage water within the NCA to slow runoff to increase infiltration to the aquifer. There is also an opportunity to manage over-abstraction from the aquifer and rivers through careful and efficient use of water and through use of alternative more sustainable sources of water supply where possible.	**Water availability** **Biodiversity** **Regulating water quality** **Food provision**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Climate regulation	Woodlands Grazing marsh Grassland Fen Reedbeds Heathland	The majority of the NCA has a low soil carbon content of 0-5 per cent. However, around Birmingham, carbon content increases to 5-10 per cent.[5] Carbon content is likely to be higher under the more than 11,876 ha of woodland within the NCA, as well as under the more than 1,000 ha of grazing marsh, grassland, fen, reedbeds, and heathland.	Regional	Carbon storage in the areas of woodland, grazing marsh, grassland, fen, reedbeds and heathland is likely to be higher, and this may be increased by the expansion of these areas. This may lead to a reduction in provisioning of food if planted on agricultural land. However, if created, there is good potential to increase biodiversity and increase recreational resource if publicly accessible. Creation may also increase the sense of place by enhancing the character of Arden.	There is an opportunity to increase the carbon storage potential of the area through the net expansion of new woodland, grazing marsh, grassland, fen, reedbeds and heathland in appropriate areas.	**Climate regulation** **Biodiversity** **Recreation** **Sense of place/ inspiration** **Regulating water quality**
Regulating soil erosion	Soils Woodlands Hedgerows .	Nearly 60 per cent of the NCA is not generally susceptible to soil erosion (associated with the slowly permeable clayey soils, loamy soils with naturally high groundwater, and the floodplain soils with naturally high groundwater). Of the remaining soils the slightly acid loamy and clayey soils with impeded drainage (covering 26 per cent of the NCA) are prone to compaction, capping/slaking, leading to increased risk of soil erosion by surface water run-off, especially on steeper slopes. By comparison, the light freely draining slightly acid loamy soils and the freely draining slightly acid sandy soils (together covering 14 per cent of the NCA) have enhanced risk of soil erosion on moderately or steeply sloping land where cultivated or bare soil is exposed. This is exacerbated where organic matter levels are low after continuous arable cultivation or where soils are compacted. There is the potential for wind erosion on some coarse textured cultivated variants.	Local	Not a major issue for this NCA with over 60 per cent of the area not susceptible to soil erosion. Addressing the issue of soil erosion would require taking small areas of land out of production in high risk areas to reduce compaction, trap sediment and improve soil health. This approach would lower food production very slightly in the short term but could offer benefits to biodiversity by reducing sedimentation in rivers. It may also help store limited amounts of carbon and could help maintain fertility in the longer term. Strengthening the hedgerow network would add to the sense of place as well as increasing biodiversity.	There is scope to reinstate and strengthen hedgerows and create grass buffer strips across steeper slopes under arable cultivation. Also to strengthen the hedgerow network and increase the population of hedgerow trees in the river valleys.	**Regulating soil erosion** **Biodiversity** **Sense of place/ inspiration** **Regulating soil quality**

[5] Joint Nature Conservation Committee website, Special Areas of Conservation, Ensor's Pool (accessed November 2010).

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating soil quality	Soils Heathland Woodlands Hedgerows	This NCA has 7 main soilscape types: ■ Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils, covering 36 per cent of the NCA. ■ Slightly acid loamy and clayey soils with impeded drainage (26 per cent). ■ Freely draining slightly acid loamy soils (13 per cent). ■ Slowly permeable seasonally wet acid loamy and clayey soils (11 per cent). ■ Loamy soils with naturally high groundwater (9 per cent). ■ Loamy and clayey floodplain soils with naturally high groundwater (3 per cent). ■ Freely draining slightly acid sandy soils (1 per cent). Those covering 10 per cent or more of the NCA are described below. The slowly permeable, seasonally wet, slightly acid but base-rich loamy and clayey soils (36 per cent) and the slowly permeable, seasonally wet acid loamy and clayey soils (11 per cent) may suffer compaction and/ or capping as they are easily damaged when wet. In turn this may lead to increasingly poor water infiltration and diffuse pollution as a result of surface water run-off. Management measures that increase organic matter levels can help reduce these problems. Equally, the slightly acid loamy and clayey soils with impeded drainage (26 per cent) are easily poached by livestock and compacted by machinery when the soil is wet. Weak topsoil structures can easily be damaged. Careful timing of activities is required to reduce the likelihood of soil compaction. The freely draining slightly acid loamy soils (13 per cent) may be valuable in enabling the recharge of the aquifers that underlie this NCA, requiring the maintenance of good soil structure, improved by the addition of organic matter, to aid water infiltration and requiring the matching of nutrients to needs to prevent groundwater pollution.	Local	It is important to minimise compaction and / or capping risk on clayey soils, which can arise from over-grazing, trafficking or other mechanised activities. These will tend to exacerbate run-off problems as well as damaging soil structure. These soils may have limited potential for increasing organic matter levels by management interventions. This in turn should have enhanced benefits for biodiversity.	There is scope to employ minimal tillage and incorporate organic matter to increase levels of soil organic matter and relieve soil compaction.	**Regulating soil quality** **Regulating soil erosion** **Biodiversity** **Water availability**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Regulating water quality	Woodlands Wetland habitat/ reedbed	In the south of the NCA, surface water is generally of 'moderate' ecological status or ecological potential in the case of artificial or heavily modified waterbodies, although there are some reaches of poor quality in and around Birmingham and Coventry. The chemical status of surface waterbodies generally 'does not require assessment'; however in the south of the NCA there are some river lengths with 'good' chemical status. The chemical status of groundwater sources is 'good' in the south of the NCA, but 'poor' in the north of the NCA, around Birmingham and Coventry.[6,7]	Regional	Around Birmingham and Coventry groundwater chemical status is 'poor' so improvements are required to the water quality through selective reduction in inputs from point source pollution and diffuse pollution from for example, agricultural activities, through better land management and the buffering water courses, which should help address specific pollutant issues in water bodies in the north around the conurbations that fail standards.	Expansion of semi-natural wetland habitats adjacent to watercourses, including reedbeds and grazing marsh, plus creation of grassland buffer strips /restoration of hedgerows across slopes within river catchments.	**Regulating water quality** **Regulating soil erosion** **Biodiversity**
Regulating water flow	Rivers	Tamworth is at medium risk of flooding from the rivers Tame and Anker and Bourne Brook. In Birmingham the key source of flooding is from the River Tame and its main tributary the River Rea, and the risk of flooding is high. There is a relatively high level of flood risk in Coventry from the River Sowe and the River Sherbourne. There are approximately 2,200 properties at risk of fluvial flooding within Warwick from the River Avon and in Redditch there are between 250 and 500 homes at risk of flooding from the River Arrow.[8]	Local	Within the NCA flooding may be reduced through well designed natural flood alleviation schemes such as river restoration and creation of new wetlands to retain water in situ. River corridors will benefit from further wetland habitat creation, the reduction of intensive land uses and re-establishing the natural processes associated with watercourses, including naturally-functioning floodplains. This should also go hand-in-hand with improved public access, where appropriate.	Creation and extension of semi-natural floodplain habitats such as flood meadows, wet woodland and reedbed riparian margins, thick hedges in floodplain, which dissect the direction of peak flow. In particular, the existing wet meadows alongside the Blythe and Anker are areas where the river and its flooplain can function naturally, which in turn will help to reduce flood risk.	**Regulating water flow** **Biodiversity** **Water availability** **Recreation** **Regulating soil erosion** **Regulating soil quality**

[6]Environment Agency, Humber River Basin Management Plan, Annex A: Current state of waters, December 2009.

[7]Environment Agency, Severn River Basin Management Plan, Annex A: Current state of waters, December 2009.

[8]Environment Agency, River Severn Catchment Flood Management Plan, Summary Report, December 2009.

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Pollination	Grassland meadows Heathland Gardens and parks	Grassland, meadows and heathland, totalling less than 1 per cent of the NCA area, provide limited nectar sources for pollinating insects although lengths of hedgerow and the numerous gardens and parks of the major built up areas of the NCA are likely to provide important nectar sources.	Local	Increasing nectar sources, through creating and enhancing grassland, meadows, heathland and hedgerows may reduce the little food production that there is in the area, although, it would lead to a much needed increase in biodiversity.	Increase unimproved grassland, floodplain grazing marsh and woodland with a diverse ground flora, and plant and manage flowering hedgerows and nectar and forage mix areas (particularly in arable areas), to increase the diversity of flowering plants and increase the sustainability of local agricultural production.	**Pollination** **Biodiversity** **Sense of place/ inspiration**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Sense of place/ inspiration	Woodland cover Hedgerows and hedgerow oaks Wood pasture Landforms such as low rounded hills, steep scarps and incised valleys Lane network linking scattered farms and hamlets Former coalfields and colliery settlements Parklands, canals and railways	Countryside Quality Counts data suggests that the character of the resource has probably been maintained or is strengthening slowly. However there has been a general lack of woodland management in many places. Loss and deterioration of hedges and hedgerow trees, the former particularly as a result of field amalgamation. Many hedgerows have fallen into disrepair through a lack of and/or poor management. Hedgerow trees numbers have declined.	Regional	Management to enforce sense of place is likely to increase sense of history. Conserving and enhancing the distinctive landscape features is also likely to benefit biodiversity by enhancing or expanding available habitat.	There is an opportunity to maintain a sense of place, valued by local people and visitors by conserving the variety of landscape features which give the NCA its distinctive character. There are opportunities to maintain the historic features that provide local distinctiveness within the different parts of the NCA such as the industrial coal mining heritage. There are opportunities to market the associations with Shakespeare's 'Forest of Arden' and ensure the landscape features associated with that are conserved and enhanced.	**Sense of place/ inspiration** **Biodiversity** **Recreation** **Sense of history**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Sense of history	Wood pasture Deer parks Ancient oak woodland Historic field pattern Mining and built heritage	1.7 per cent of NCA registered parks and gardens. 155 Scheduled monuments. 4,932 listed buildings. These contribute to a heritage of past coal mining and associated colliery villages as well as municipal and commercial buildings in Birmingham.	Local	Increasing sense of history has some potential to increase tourism. This could in turn lead to increasing recreational opportunities and sense of place by reinforcing the historic character of the landscape.	There is an opportunity to increase sense of history by protecting the character and historic resource of the large country houses and parklands. Also by increasing the protection and appropriate management of above and below ground archaeology, ancient trackways and the established vernacular of settlements.	**Sense of history** **Recreation** **Sense of place/ inspiration**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Tranquillity	Wooded landscape Sunken lanes Lack of visual and noise intrusion	Just 10 per cent of the NCA is classified as 'undisturbed' according to the CPRE Intrusion Map 2007, a decline from 34 per cent in the 1960s.	Local	Increasing tranquillity through expanding areas of woodland could also increase biodiversity and sense of place.	There is an opportunity to protect tranquillity in some core areas where intrusion is currently low such as in the sunken lanes with hedgerows. This will increase the opportunity for people to feel connected to nature and contribute to wellbeing and health. There is an opportunity to reduce where possible the impact of settlement and road infrastructure in the urban fringe areas by planting woodland shelter belts, strengthening the hedgerow pattern and ensuring new development on settlement fringes is sensitively designed.	**Tranquillity** **Sense of history**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Recreation	Parklands Woodlands Formal parks Canals and rivers Wildlife reserves Reservoirs	Recreation is supported by 1,929 km of rights of way (at a density of 1.35 km per km^2), and just 238 ha of open access land (covering 0.2 per cent of the NCA). Numerous parks provide recreational opportunities within and surrounding Birmingham, such as Edgbaston Park adjacent to the university, while the reservoirs to the south-west of the city are well used for sailing, fishing and bird-watching. Parks, canals and rivers feature throughout the NCA and provide varying levels of recreational opportunity, while numerous golf courses are prevalent features offering more prescribed recreation.	Local	There is a strong resource here that could be utilised and increased without significant effects on other services. However, increased recreation may have minor negative effects on tranquillity, biodiversity through disturbance and potentially a small effect on food production through, for example, taking land out of production to produce paths in some areas.	Maintain and enhance the access throughout the area on public rights of way, on the long-distance route Heart of England Way, on canal towpaths and cycle and recreational sites. Open spaces should also be incorporated into well designed urban developments to provide recreational opportunities and potentially increase biodiversity.	**Recreation** **Sense of place/ inspiration**

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Biodiversity	Priority habitats including species-rich grasslands, heathlands, wetlands and woodlands Reservoirs Canal network Ensors Pool	Internationally designated site in the NCA – Ensor's Pool SAC (4 ha) in Nuneaton, designated for supporting a very large population of white-clawed crayfish.[9] There are 56 SSSI, totalling less than 1 per cent of the NCA area. The majority of these (87 per cent) are in favourable or recovering condition; 12 per cent are in unfavourable condition.	Regional	The improvement in the condition, and expansion, of woodland and priority habitats will assist in climate regulation through the storage of carbon. Increases in habitat extent could also have a positive effect on increasing recreation, water quantity, water quality and regulating soil erosion but is likely to have a negative impact on agriculture.	There is an opportunity to integrate woodland management and potentially extend broadleaved woodland, where appropriate, for biodiversity with timber and biomass production. There is also an opportunity to protect, manage and extend the habitats within greenbelt and urban fringe to retain and increase biodiversity value and improve network connections. Opportunity to expand semi-natural wetland habitats adjacent to watercourses, including reedbeds and grazing marsh and manage and extend hedgerows.	**Biodiversity** **Recreation** **Water availability** **Regulating water quality** **Regulation soil erosion** **Climate regulation**

[9]Joint Nature Conservation Committee website, Special Areas of Conservation, Ensor's Pool (accessed November 2010).

Service	Assets/attributes: main contributors to service	State	Main beneficiary	Analysis	Opportunities	Principal services offered by opportunities
Geodiversity	Exposed rock formations Designated geodiversity sites	There are 16 nationally designated geological sites within the NCA and 68 local sites. Many of the nationally designated sites are quarries or gravel pits.	National	Designated sites provide important and accessible sections of geology allowing the interpretation, understanding and continued research into the geodiversity of the NCA.	Promote the geodiversity of the NCA particularly for recreational and educational use, adding to the sense of place and sense of history. There is an opportunity to manage some of the geological sites to enhance biodiversity.	**Geodiversity** **Sense of place/ inspiration** **Sense of history** **Biodiversity**

Photo credits

Front cover: Dandy's Farm across cornfield to colliery among trees, the north eastern industrial landscape can be quite rural in character, with pockets of farmland often surrounded by urban development © Rob Cousins/Natural England

Page 4: © Philip Halling/creativecommons.org/licenses/by-sa/2.0/*

Page 5: (left) © Michael Westley/creativecommons.org/licenses/by-sa/2.0/*, (right) © John Evans/creativecommons.org/licenses/by-sa/2.0/*

Page 6: © Isobel Brooks/Enjoywarwickshire.com

Page 7: © David Stowell/creativecommons.org/licenses/by-sa/2.0/*

Page 8: (top) © Jim Lawrie/Enjoywarwickshire.com, (Bottom) © E Gammie/creativecommons.org/licenses/by-sa/2.0/*

Page 10: © Robin Stott/creativecommons.org/licenses/by-sa/2.0/*

Page 12: © Mick Malpass/creativecommons.org/licenses/by-sa/2.0/*

Page 16: © Geoff Gartside/creativecommons.org/licenses/by-sa/2.0/*

Page 27: © neil at Geograph.org.uk/creativecommons.org/licenses/by-sa/2.0/*

Page 31: © Robin Stott/creativecommons.org/licenses/by-sa/2.0/*

* To view a copy of the licence/s, visit creativecommons.org/licenses/by-sa/2.0/ or send a letter to Creative Commons, 171 Second Street, Suite 300, San Francisco, California, 94105, USA. *(if credit requires creative commons acknowledgement)*

NATURAL ENGLAND

Natural England is here to secure a healthy natural environment for people to enjoy, where wildlife is protected and England's traditional landscapes are safeguarded for future generations.

Catalogue Code: NE337 ISBN: 978-1-78367-145-8

Should an alternative format of this publication be required, please contact our enquiries line for more information: 0845 600 3078 or email enquiries@naturalengland.org.uk

www.naturalengland.org.uk

This note/report/publication is published by Natural England under the Open Government Licence for public sector information. You are encouraged to use, and reuse, information subject to certain conditions.

For details of the licence visit www.naturalengland.org.uk/copyright

Natural England images are only available for non commercial purposes. If any other information such as maps or data cannot be used commercially this will be made clear within the note/report/publication.

© Natural England 2014